

What is claimed is:

1 1. An information distribution service providing
2 system, comprising:
3 a server system which provides a plurality of mobile
4 information terminals, carried by a plurality of users
5 who have been registered as users of information
6 distribution service, with the information distribution
7 service via a communication network; and
8 a terminal of an information distribution requester,
9 which terminal communicates with the server system and
10 specifies a user characteristic and information
11 distribution object areas for the users to whom information
12 is to be distributed by the information distribution
13 service,
14 said server system including:
15 distribution state change monitoring means
16 which monitors change over time in distribution of
17 the mobile information terminals of the users with
18 the user characteristic in the information
19 distribution object area, based on location
20 information of the mobile information terminal;
21 distribution state predicting means which
22 predicts a distribution state of the mobile
23 information terminals in the future based on the
24 monitoring result obtained by said distribution
25 state change monitoring means; and

26 information distributing means which
27 distributes information to the mobile information
28 terminals of the users based on the prediction result
29 obtained by the distribution state predicting means.

1 2. An information distribution service providing
2 system as set forth in claim 1,

3 wherein said distribution state change monitoring
4 means includes:

5 a distribution density calculating unit which
6 calculates distribution density of mobile
7 information terminals of the service users with the
8 user characteristic, in a specified block included
9 in the information distribution object area, based
10 on location information of the mobile information
11 terminal; and

12 a high density distribution area detecting
13 unit which detects a high density distribution area,
14 in which the distribution density is higher than
15 a predetermined density, based on the calculation
16 result obtained by said distribution density
17 calculating unit,

18 wherein said distribution state predicting means
19 includes:

20 a high density distribution area movement
21 displacement calculating unit which calculates
22 movement displacement of the high density

23 distribution area detected by said high density
24 distribution area detecting unit; and
25 a high density distribution area movement
26 predicting unit which predicts a destination to which
27 the high density distribution area moves, based on
28 the movement displacement obtained by said high
29 density distribution area movement displacement
30 calculating unit, and
31 wherein said information distribution means
32 includes an information distributing unit of a high density
33 distribution area prediction type, which information
34 distributing unit selects information corresponding to
35 the destination of movement, predicted by said high density
36 distribution block movement predicting unit, and
37 distributes the selected information.

1 3. An information distribution service providing
2 system as set forth in claim 1, wherein said information
3 distribution means includes:

4 a distance/arrival time estimating unit which
5 estimates the distance and/or the time required to move
6 from the high density distribution block to a place where
7 the information distribution requester is located or a
8 place specified by the information distribution requester,
9 based on the calculation result obtained by said high
10 density distribution area movement displacement
11 calculating unit; and

12 an information distributing unit of a
13 distance/arrival time estimation type, which information
14 distributing unit distributes information corresponding
15 to the distance and/or the arrival time estimated by said
16 distance/arrival time estimating unit to the mobile
17 information terminals within the high density distribution
18 area.

1 4. An information distribution service providing
2 system as set forth in claim 3, wherein said information
3 distributing means includes a distribution information
4 recommending unit which makes recommendations with respect
5 to to-be-distributed information corresponding to the
6 distance/arrival time estimated by said distance/arrival
7 time estimating unit.

1 5. An information distribution service providing
2 system as set forth in claim 2, wherein said information
3 distributing means includes a high-density distribution
4 area movement prediction result notifying unit which
5 notifies the information distribution requester's
6 terminal of the prediction result obtained by said high
7 density distribution block movement predicting unit.

1 6. An information distribution service providing
2 system as set forth in claim 1, wherein said server system
3 includes user reaction processing means which analyzes

4 reaction of the service users' mobile terminals to
5 information distributed from said information
6 distributing means, and then outputs the analysis result
7 to an external apparatus.

1 7. An information distribution service providing
2 system as set forth in claim 1, wherein said distribution
3 state predicting means includes an approximation function
4 estimating unit which predicts the distribution state by
5 estimating an approximation function with respect to
6 change over time in the future distribution state based
7 on a history of monitoring result in the past obtained
8 by said distribution state change monitoring means.

1 8. An information distribution method for an
2 information distribution service providing system which
3 includes: a server system which provides a plurality of
4 mobile information terminals, carried by a plurality of
5 users who have been registered as users of information
6 distribution service, with the information distribution
7 service via a communication network; and a terminal of
8 an information distribution requester, which terminal
9 communicates with the server system and specifies a user
10 characteristic and information distribution object areas
11 for the users to whom information is to be distributed
12 by the information distribution service, said method
13 comprising:

14 on the server system,
15 monitoring change over time in distribution of the
16 mobile information terminals of the users with the user
17 characteristic in the information distribution object area,
18 based on location information of the mobile information
19 terminals;
20 predicting a distribution state of the mobile
21 information terminals in the future based on the monitoring
22 result; and
23 distributing information to the mobile information
24 terminals of the service users based on the prediction
25 result.

1 9. An information distribution method as set forth
2 in claim 8, wherein the server system performs the
3 following:
4 calculating distribution density of mobile
5 information terminals of the service users with the user
6 characteristic in a specified block included in the
7 information distribution object area, based on location
8 information of the mobile information terminal;
9 detecting a high density distribution area, in which
10 the distribution density is higher than a predetermined
11 density, based on the calculation result;
12 calculating movement displacement of the high
13 density distribution area;
14 predicting a destination to which the high density

15 distribution area moves, based on the thus-obtained
16 movement displacement; and
17 selecting information corresponding to the
18 destination of movement predicted, and distributing the
19 corresponding information.

1 10. An information distribution method as set
2 forth in claim 8, wherein the server system performs the
3 following:

4 estimating the distance and/or the time required to
5 move from the high density distribution block to a place
6 where the information distribution requester is located
7 or a place specified by the information distribution
8 requester, based on the movement displacement obtained
9 by the above-mentioned calculation; and

10 distributing information corresponding to the
11 distance and/or the arrival time estimated to the mobile
12 information terminals within the high density distribution
13 area.

1 11. An information distribution method as set
2 forth in claim 10, wherein said server system makes
3 recommendations with respect to to-be-distributed
4 information in accordance with the thus estimated
5 distance/arrival time to the terminal of the information
6 distribution requester.

1 12. An information distribution method as set
2 forth in claim 9, wherein said server system notifies the
3 information distribution requester's terminal of the
4 result of prediction about a destination of the high density
5 distribution area.

1 13. An information distribution method as set
2 forth in claim 8, wherein said server system analyzes
3 reaction of the service users' mobile terminals to
4 information distributed to the service users' mobile
5 terminals based on the distribution state prediction
6 result, and then outputs the analysis result to an external
7 apparatus.

1 14. An information distribution method as set
2 forth in claim 8, wherein said server system predicts the
3 distribution state by estimating an approximation function
4 with respect to change over time in the future distribution
5 state based on a history of monitoring result in the past
6 distribution state.

1 15. A server system for use in an information
2 distribution service providing system which includes: a
3 server system which provides a plurality of mobile
4 information terminals, carried by a plurality of users
5 who have been registered as users of information
6 distribution service, with the information distribution

7 service via a communication network; and a terminal of
8 an information distribution requester, which terminal
9 communicates with the server system and specifies a user
10 characteristic and information distribution object areas
11 for the users to whom information is to be distributed
12 by the information distribution service, said server
13 system comprising:

14 distribution state change monitoring means which
15 monitors change over time in distribution of the mobile
16 information terminals of the users with the user
17 characteristic in the information distribution object area,
18 based on location information of the mobile information
19 terminal;

20 distribution state predicting means which predicts
21 distribution state of the mobile information terminals
22 in the future based on the monitoring result obtained by
23 said distribution state change monitoring means; and

24 information distributing means which distributes
25 information to the mobile information terminals of the
26 users based on the prediction result obtained by the
27 distribution state predicting means.

1 16. A server system for use in the information
2 distribution providing system as set forth in claim 15,
3 wherein said distribution state change monitoring
4 means includes:

5 a distribution density calculating unit which

6 calculates distribution density of mobile
7 information terminals of the service users with the
8 user characteristic in a specified block included
9 in the information distribution object area, based
10 on location information of the mobile information
11 terminals;

12 a high density distribution area detecting
13 unit which detects a high density distribution area,
14 in which the distribution density is high, based
15 on the calculation result obtained by said
16 distribution density calculating unit; and

17 a high density distribution area movement
18 displacement calculating unit which calculates
19 movement displacement of the high density
20 distribution area detected by said high density
21 distribution area detecting unit,

22 wherein said distribution state predicting means
23 includes a high density distribution area movement
24 predicting unit which predicts a destination to which the
25 high density distribution area moves, based on the movement
26 displacement obtained by said high density distribution
27 block movement displacement calculating unit, and

28 wherein said information distribution means
29 includes an information distributing unit of a high density
30 distribution area prediction type, which information
31 distributing unit selects information corresponding to
32 the destination of movement, predicted by said high density

33 distribution area movement predicting unit, and distribute
34 the information.

1 17. A server system for use in the information
2 distribution providing system as set forth in claim 15,
3 wherein said information distribution means include:

4 a distance/arrival time estimating unit which
5 estimates the distance and/or arrival time from the high
6 density distribution area to a place where the information
7 distribution requester is located or a place specified
8 by the information distribution requester, based on the
9 calculation result obtained by said high density
10 distribution area movement displacement calculating unit;
11 and

12 an information distributing unit of a
13 distance/arrival time estimation type, which information
14 distributing unit distributes information corresponding
15 to the distance and/or the arrival time estimated by said
16 distance/arrival time estimating unit to the mobile
17 information terminals within the high density distribution
18 block.

1 18. A server system for use in the information
2 distribution providing system as set forth in claim 16,
3 wherein said information distributing means includes a
4 high-density distribution area movement prediction result
5 notifying unit which notifies the information distribution

6 requester's terminal of the prediction result obtained
7 by said high density distribution area movement predicting
8 unit.

1 19. A server system for use in the information
2 distribution providing system as set forth in claim 15,
3 said server system further comprising user reaction
4 processing means which analyzes reaction of the service
5 users' mobile terminals to information distributed from
6 said information distributing means, and then outputs the
7 analysis result to an external apparatus.

1 20. A server system for use in the information
2 distribution providing system as set forth in claim 15,
3 wherein said distribution state predicting means includes
4 an approximation function estimating unit which predicts
5 the distribution state by estimating an approximation
6 function with respect to change over time in the future
7 distribution state based on a history of monitoring result
8 in the past obtained by said distribution state change
9 monitoring means.